

## CLAIMS:

1. A video encoding method for the compression of an original video sequence divided into successive groups of frames (GOFs), said method comprising the steps of:

(1) generating from the full resolution frames of the original video sequence, by means of a wavelet decomposition, a sequence of low resolution frames organized in successive low resolution GOFs;

(2) performing on each low resolution GOF of said sequence of low resolution frames a motion compensated spatio-temporal analysis, leading to a low resolution sequence;

(3) performing a motion compensated spatio-temporal analysis of each full resolution GOF of the original video sequence;

(4) replacing at each temporal decomposition level the low-frequency subbands of said decomposition by the corresponding spatio-temporal subbands of the low resolution sequence;

(5) coding the modified sequence thus obtained and the motion vectors generated during the motion compensated spatio-temporal analysis of each full resolution GOF, for generating an output coded bitstream.

2. A video encoding device for the compression of an original video sequence divided into successive groups of frames (GOFs), said device comprising:

(1) means for generating from the full resolution frames of the original video sequence and by means of a wavelet decomposition, a sequence of low resolution frames organized in successive low resolution GOFs;

(2) means for performing on each low resolution GOF of said sequence of low resolution frames a motion compensated spatio-temporal analysis, leading to a low resolution sequence;

(3) means for performing a motion compensated spatio-temporal analysis of each full resolution GOF of the original video sequence;

(4) means for replacing at each temporal decomposition level the low-frequency subbands of said decomposition by the corresponding spatio-temporal subbands of the low resolution sequence;

(5) means for coding the modified sequence thus obtained and the motion vectors generated during the motion compensated spatio-temporal analysis of each full resolution GOF, for generating an output coded bitstream.

- 5 3. A video decoding method, provided for decoding a coded bitstream corresponding to a video sequence coded by means of a video encoding method comprising, for the compression of said original video sequence, the steps of:
- (1) generating from the full resolution frames of the original video sequence, by means of a wavelet decomposition, a sequence of low resolution frames organized in  
10 successive low resolution GOFs;
- (2) performing on each low resolution GOF of said sequence of low resolution frames a motion compensated spatio-temporal analysis, leading to a low resolution sequence;
- (3) performing a motion compensated spatio-temporal analysis of each full resolution GOF of the original video sequence;
- 15 (4) replacing at each temporal decomposition level the low-frequency subbands of said decomposition by the corresponding spatio-temporal subbands of the low resolution sequence;
- (5) coding the modified sequence thus obtained and the motion vectors generated during the motion compensated spatio-temporal analysis, of each full resolution GOF, for  
20 generating an output coded bitstream;
- said video decoding method comprising successive steps that are dual of the steps performed according to the video encoding method of claim 1.

4. A video decoding device, provided for decoding a coded bitstream  
25 corresponding to a video sequence coded by means of a video encoding device comprising, for the compression of said original video sequence:
- (1) means for generating sequence from the full resolution frames of the original video sequence and by means of a wavelet decomposition, a sequence of low resolution frames organized in successive low resolution GOFs;
- 30 (2) means for performing on each low resolution GOF of said sequence of low resolution frames a motion compensated spatio-temporal analysis, leading to a low resolution sequence;
- (3) means for performing a motion compensated spatio-temporal analysis of each full resolution GOF of the original video sequence;

(4) means for replacing at each temporal decomposition level the low-frequency subbands of said decomposition by the corresponding spatio-temporal subbands of the low resolution sequence;

(5) means for coding the modified sequence thus obtained and the motion vectors generated during the motion compensated spatio-temporal analysis, of each full resolution GOF, for generating an output coded bitstream;

said video decoding device comprising successive means that are dual of the means provided in the video encoding device according to claim 2.